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A CASE OF RUPTURE
OF THE
URINARY BLADDER,

WITH REMARKS UPON THE TREATMENT OF
THIS ACCIDENT.

BY



ERSKINE MASON, M. D.,

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[REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, AUGUST, 1872.]

NEW YORK:
D. APPLETON AND COMPANY,
549 & 551 BROADWAY.
1872.

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549 & 551 BROADWAY, NEW YORK.

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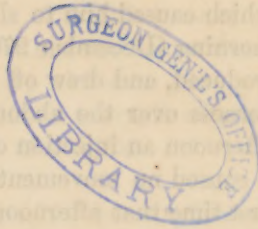
A CASE OF RUPTURE OF THE URINARY BLADDER WITH REMARKS UPON THE TREATMENT OF THIS DISEASE

WITH REMARKS UPON THE TREATMENT OF
THIS DISEASE

By J. H. APPLETON, M.D.,
OF NEW YORK.

NEW YORK:
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125 NASSAU ST., COR. N. 2ND ST.

1871.



A CASE OF RUPTURE OF THE URINARY BLADDER, WITH REMARKS UPON THE TREATMENT OF THIS DISEASE.¹

MICHAEL BURKE, aged twenty-six, Ireland, single, laborer, was admitted into the Roosevelt Hospital, at midnight, on December 26, 1871, complaining of inability to urinate, although having an urgent desire to do so. He stated that at noon, on December 25th, he was seized with an attack of dizziness, and fell down a long flight of stairs. What portion of his body he struck in his fall he was unable to state. He complained of pains about the hips, some tenderness over the hypogastrium, and frequent desire to urinate. Mind clear, temperature 98½, pulse 70, and small. Upon inspection, both eyes were found ecchymosed, and the lids of the left eye much swollen; there was also a small cut upon the left upper lid just beneath the eyebrow. Beyond a few abrasions on the arms and legs, no other wound was detected.

A No. 10 (English scale) silver catheter was passed, immediately upon his admission into the hospital, by the house-surgeon, Dr. Schuyler. The instrument entered the bladder with ease, but only a few drops of water passed, and this was streaked with blood. Patient being in great pain, π x of Magendie's solution of morphia was given hypodermically,

¹ Read before the New York Journal Association, April 26, 1872.

which caused him to sleep during the night. The following morning (December 27th) the catheter was again readily introduced, and drew off $\frac{3}{4}$ iv of urine, with some blood. Tenderness over the abdomen seemed to be increasing. In the afternoon an injection of an $\frac{3}{4}$ j of oleum ricini was given, but it caused no movement from the bowels. I saw him for the first time that afternoon about 4 o'clock. His condition was then, perhaps, more comfortable than it was a few hours previous. He was at this time able to walk to the water-closet at the end of the ward, and void a small quantity of urine. His expression of countenance was anxious and very pale—tongue somewhat furred; very thirsty, and with a pulse of only 68, small, and temperature $98\frac{3}{4}$. I at this time introduced a catheter readily into the bladder, and drew off some clear urine; then introducing my finger into the rectum, satisfied myself that no injury, such as laceration, had occurred to the urethra. During the examination *per rectum* I thought I detected a swelling posterior and a little to the left of the prostate, but on this point I did not feel quite satisfied. The patient now was complaining of great pain in the lumbar region, and I was unable to decide positively if rupture of the bladder had occurred, or whether he was suffering from some injury of the kidneys, and the pain over the suprapubic region was not due to a blow he had there received. Had I been able there and then to make my strong suspicions of rupture of the bladder a little more positive, I should have at once resorted to the operation which I afterward performed.

I therefore gave directions for the patient to remain in bed, never to try and urinate himself, to have the catheter passed every hour if necessary, to be kept quietly under morphia, have a camphor stupe applied over the abdomen, and, if any symptoms changed for the worse, that I should be sent for at once.

At 10 P. M., when the house-surgeon drew off his water, there were no changes in his symptoms; πx of Magendie's solution was at this time given hypodermically.

December 28th, 3.15 A. M.—He was very restless and

thirsty; pulse 112, temperature 102°. A small amount of urine was then drawn, and for the first time the doctor found some difficulty in passing the catheter; abdomen now was hard and extremely painful; $\frac{1}{4}$ x of solution morphia administered as before, and Vichy water given as a drink.

5.30 A. M.—Patient sleeping.

6.30 A. M.—Water again drawn, though only a small quantity; pulse 120, small; temperature 101°. Same difficulty as before experienced upon introduction of the catheter.

9 A. M.—A little bloody urine was drawn off; pulse 112; temperature 99 $\frac{1}{2}$ °. Has not as much pain in the abdomen, though considerable tympanitis is present. Dr. Schuyler now called at my office, and reported the condition of the patient. I at once went up to the hospital, reaching there at 10 A. M. I found the patient lying in bed, with his limbs drawn up, great tympanitis, hiccough, and vomiting, excessive tenderness over the whole abdomen; with a small, wiry pulse of 120, coated tongue, great restlessness, and cool extremities.

There could be now no doubt that the case was one of rupture of the bladder, and complicated by general peritonitis; and that, if there was any thing to be done by operative procedure, there was no time to be lost. I therefore determined to put in practice what I had some time previously made up my mind was the proper course to pursue in just this class of injuries, viz., to lay open the bladder through the perinæum, as in the lateral operation for stone, and thus give a free exit to the urine.

Placing the patient under the influence of ether, I again examined him thoroughly *per rectum*, and convinced myself that there was no laceration, either of the urethra or neck of the bladder around the prostate. Posterior to the prostate, and to the left, a decided tumor was felt, which to my finger communicated the sense of fluctuation; there was no thickening or induration of the tissues anterior to the neck of the bladder. A large-sized staff was now passed into the bladder with the greatest facility, and I laid open the bladder, the same as in the lateral operation for stone. As soon as the

bladder was opened, a large quantity of bloody urine escaped. Passing my finger into the bladder, so as to enlarge the opening, I felt confident I detected a rent in the posterior wall of the viscus, but I did not examine this opening thoroughly, as I feared I might do injury did I pursue investigations further in that direction, being convinced that we are very liable to do irreparable injury by too much fingering of parts after delicate operations.

Two points here noticed are worthy of observation :

1. That upon introducing the finger into the bladder the temperature inside the organ was perceptibly lower than the surface of the body, or the cut edges of the wound, and this fact was observed also by Dr. Sizer, our senior assistant.

2. That the tumor, felt through the rectum, behind and to the left of the prostate, disappeared after the bladder was opened. There being some venous bleeding from the wound which ice did not satisfactorily control, a large flexible catheter was passed through the wound into the bladder, and the wound tamponed with lint. The patient was then removed to his bed, a warm camphor-stupe applied over the abdomen, and a dose of opium ordered.

My diagnosis was now that the rupture had taken place through the posterior wall of the bladder, that the rent had extended through the peritoneal covering, and that the urine had extravasated into the pelvic cavity, but rested chiefly in the posterior *cul-de-sac*.

What the obstruction was which the house-surgeon met with in his later attempts to pass the catheter, I am at a loss to discern, unless it were due to an extremely contracted condition of the bladder being present on these occasions. Urine flowed freely through the catheter, and at 3 P. M. he complained but little of pain, indeed was quite comfortable; pulse 108, weak; temperature $98\frac{3}{4}^{\circ}$.

7 P. M.—Has a little pain over the bladder; pulse 116; temperature $101\frac{3}{8}^{\circ}$; ate some farina-and-milk for his supper.

10 P. M.—Much easier; abdomen less tense and less tender; sleeping.

29th, 9.30 A. M.—Passed a comfortable night, feels “easy,”

has had a slight movement from the bowels; pulse 100; temperature $101\frac{1}{4}^{\circ}$.

3 P. M.—Had another movement from the bowels; abdomen more tympanitic and painful than at last note. Spongipiline applied over the abdomen, and 3j of U. S. solution of morphia was directed to be given p. r. n.

7 P. M.—Pulse 100; temperature 102° . Abdomen distended, though not very painful; respiration 24. Diet consists of milk, which he takes readily; he complains somewhat of tenesmus; urine passes freely through the catheter; a brown discoloration is now observed over the inguinal, hypogastric, and perineal regions, and down the thighs; a pill of half a grain of opium ordered every three hours.

December 30th, 9 A. M.—Pulse 92; temperature $100\frac{3}{8}^{\circ}$; respiration 20; but little pain; abdomen less tense, tongue slightly furred; had natural movement of bowels this morning; catheter removed.

12 M.—Urine flows freely, and is clear; wound looks well; opium ordered to be taken so as to endeavor to keep the respiration down to 20. Pulse 88; temperature $100\frac{3}{8}^{\circ}$; respiration 23.

3 P. M.—Pulse 92; temperature $101\frac{1}{8}^{\circ}$; respiration 30. Those portions of the body previously spoken of, as presenting a dark-brown appearance, present a hard and indurated feeling. Abdomen a little more tense than yesterday. Patient is bathed in profuse perspiration, which has a strong urinous odor; half grain of opium ordered every two hours.

December 31st, 9 A. M.—Pulse 84; temperature $99\frac{1}{2}^{\circ}$; respiration 24. Urine passes freely by the external wound. Feels better and stronger. Abdomen is less tense, and discoloration is fading.

3 P. M.—Pulse 80; temperature 100° ; respiration 25. Very little pain from pressure over the abdomen, takes nourishment well; still has considerable perspiration, which is of the same strong urinous odor.

January 1st, 9 A. M.—Pulse 80; temperature $99\frac{3}{4}^{\circ}$; respiration 22. Feels much better, and so continued through the day, with less perspiration than the day previous, however.

Passed a large quantity of clear urine through the wound, which had a strong ammoniacal odor.

January 3d, 9 P. M.—Pulse 84; temperature 102°; respiration 24. Says he feels quite well, appetite good, wound looks well, urine high-colored, and of a strong ammoniacal odor; still has perspiration of the same character as before. All swelling of the abdomen rapidly disappearing. Opium discontinued.

January 8th.—Since last date patient steadily improving. Pulse this morning 90; temperature 98 $\frac{2}{3}$ °; respiration 21. Begins to pass some water per urethra; improved steadily, so that on January 11th he was dressed, and sat up for a little while.

January 25th.—Passes almost all his water by urethra, but is troubled with great irritability of the bladder, so that he is compelled to pass water very frequently. Ten drops of tinct. of ergot, with ten drops of tinct. ferri mur., ordered three times a day, and under this treatment his bladder-difficulty rapidly abated.

February 2d.—Feeling quite well, he desired to be discharged, so as to go to work.

February 3d.—I passed a No. 12 sound into the bladder, which met with no obstruction in its passage, nor caused the slightest pain to the patient; he was therefore discharged from the hospital, cured, on the thirty-ninth day after the accident, and the thirty-seventh day after the operation.

I give the history of this case in full, on account of its being comparatively a rare though most serious form of injury, and because it illustrates so well the efficacy of the mode of treatment which I desire to advocate.

The bladder, its diseases and injuries, has always presented peculiar attractions to the surgeon.

With reference to its diseases, much has been written, and great have been the advances made by the profession during the past few years in the treatment of the varied disorders which this organ is liable to. As to its injuries, and especially rupture or laceration of its walls, the result of external violence, we have not made the same progress in respect to treatment as has been effected in regard to its diseases; and, though no longer believing, as did the ancients, that all

wounds of the bladder are necessarily fatal, yet, from the days of Hippocrates down, this class of injuries has to be classed among the most fatal with which we have to deal—and particularly rupture the result of external violence. To convince ourselves of the truth of this assertion, we have but to glance at the statistics of this injury, as given by Mr. Birkett in Holmes's "Surgery," and by Prof. Stephen Smith, of this city, in a paper "On Rupture of the Urinary Bladder," which appeared in the *New York Journal of Medicine* for 1851 (vol. vi., p. 374). In the article by Mr. Birkett we find that the "records of fifty examples of this injury show that, with the exception of three, all the cases terminated fatally." Of these three examples of recovery, the symptoms of only one were those of extravasation of urine into the peritoneal cavity; one the extravasation was into the connective tissue of the pelvis, complicated with fracture of the pelvic bones; while the third case was of the same nature, but without the complication of fracture. In Dr. Smith's paper—which, without doubt, is the best article that has been written upon this subject—we find a table of seventy-eight cases, and among this large collection but five recoveries are reported. In three of these, the extravasation was into the cellular tissue, but one into the peritoneal cavity, and one reported as partial; and in but three of these cases was the rupture due to external violence. The cause of rupture in the cases of recovery cited in Holmes's "Surgery" is not stated. The cause of injury in the seventy-eight cases just referred to was, direct violence in forty-eight; concussion, fifteen; internal causes, nine, four of which were from stricture; four, parturition; one, retroversio uteri; and in six the cause is not mentioned.

As to the location of the rent, it has been found in far the greater number of cases to have occurred in the posterior wall of the organ, and, as a consequence, the urine has passed into the peritoneal cavity. Next in order of frequency we find it at the anterior wall, and, when here situated, the extravasation is into the areolar tissue, and rarely has it been observed at the *bas-fond*. But one opening, as a rule, occurs, yet cases are referred to where more than one laceration has taken place.

Neither sex nor age proves a barrier to this accident, it

having been observed in the foetus as well as in the man of advanced years. The reason it is seen more frequently in the male than in the female is sufficiently obvious; and it has been observed more frequently between the ages of thirty and forty.

Of the cases that resulted fatally, death has most frequently followed within five days; though, in one very remarkable case, reported by Dr. E. R. Peaslee (*American Journal of Medical Sciences*, vol. xix., p. 383, 1850), the patient, a man thirty years of age, survived forty-two days, the laceration being situated at the neck of the bladder, and complicated with wound of the perinæum and fracture of the pelvic bones. Extravasation was evidently into the areolar tissue, and large abscesses were found after death in both iliac regions.

With reference to the symptoms which denote this accident, they are too well depicted in our general works on surgery to require much notice in a paper of this kind. Many of our works lay it down as a rule that there is inability to void urine on the part of the patient. That this is not always the case, at least after a few hours have elapsed from the time of injury, the case I report, as well as some others, sufficiently proves. Inability to walk about is also often observed from the first—in my case this symptom was absent. Some bruise or laceration is often noticed over the hypogastric region—none was here observed. That the patient struck upon the abdomen was sufficiently obvious, from all the wounds and abrasions upon the face, and limbs being upon the anterior aspect of the body. Two symptoms which presented themselves in the case which is related, and which were watched with great interest, were: first, the dark-brown discoloration of the hypogastric, inguinal, and perineal regions, which appeared on the fifth day after the accident, and which passed off without proceeding to suppuration; secondly, the occurrence of profuse perspiration over the whole surface of the body, which took place on the fifth day, and which continued for some three days, its odor being so strongly urinous that it was perceived at once upon entering the ward, and, to render the patient less objectionable to the surrounding patients, carbolic acid had to be used about his bed.

With reference to the first of these symptoms, I have seen no mention of it in the cases I have read. As to the other symptom, the only writer I find who mentions it is Baron Larrey in his "Surgical Memoirs of the Campaigns in Russia, Germany, and France" (translated from the French by John C. Mercer. Carey & Lee, 1832, p. 180), while speaking of wounds of the bladder. No doubt through this means much of the urine which had been extravasated into the peritoneal cavity was eliminated.

Respecting the prognosis in cases of injury of the bladder, it never can be otherwise than very grave, yet its gravity will be modified, both from the character of the wound, and the parts invaded by the extravasated urine. Gunshot-wounds, for example, are far from being so uniformly fatal as formerly supposed, as the records of both military and civil surgery amply testify; while the wounds which we denote as incised and punctured far more frequently result fatally, and hence the remark of Hippocrates: "*Cui persecta vesica lethale.*"

So with reference to that form of accident of which we specially speak, we find our prognosis is materially influenced by the locality of the rupture, and course the extravasated urine has taken, for it will be remembered that, of the fifty examples recorded in Holmes's "Surgery," of the three recoveries that followed, in only one did extravasation of urine take place into the peritoneal cavity, and, in the five cases of recovery among Dr. Smith's cases, but one gives the history of urine extravasated into the cavity of the peritonæum, one of partial extravasation, or partial rent of the peritonæum; in the remaining cases, it was only the connective tissue which was involved.

Of course the locality of the rupture will have great tendency in directing the course of the urine. If it is the anterior wall that ruptures, then it will be the connective tissue that chiefly suffers; whereas, if the posterior wall is the portion that gives way, the peritonæum will be the portion involved in far the greater number of instances, and fatal peritonitis will rapidly ensue.

An opposite view of the nature of these cases, however, is given by Blundell ("Observations on some of the more Impor-

tant Diseases of Women," by James Blundell, M. D., Dunglison's American Medical Library, Philadelphia, 1840, p. 54), who says: "If the urine is extravasated in front, I fear that there is little to be done; inflammation, sloughing, and death, are successively the fate of the unhappy patient." He recommends that an opening be made above the pubis, the extravasated urine and blood removed, and the thorough washing out of the abdominal cavity by means of the free injection of distilled water at the temperature of 98° Fahr., and this to be continued till the water which flows away bears no trace of urine; for, he says, if the urine remains in the peritoneal sac, fatal inflammation will follow. The ruptured part of the bladder was then to be drawn up to the abdominal opening; the laceration then closed by a ligature, those portions of tissue beyond the ligature being carefully cut away; the bladder is then to be drawn up by means of the ligature to the abdominal opening internally; one end of the ligature is to be cut away, the other end, to lie out of the wound to separate and be withdrawn afterward, as when an artery is tied. In pursuing such a course he believes, that in some few cases life might be preserved.

With a view to test this theory, he experimented upon four rabbits. About two ounces of human urine being thrown into their abdominal cavities, it was allowed to remain there for an hour; then it was withdrawn, and the cavity well washed with tepid cistern-water. Three of these animals died with general peritonitis, while the fourth lived. In another class of experiments he tied up the fundus of the bladder in the rabbit, afterward cutting the fundus away; the ligature, he found, came away in a few days, leaving the bladder closed, though some of the rabbits perished some months afterward in consequence of chronic disease, not apparently the necessary, but the accidental effect of the experiment. He finally believes that this may succeed in the human subject, and, as an additional inducement for its being tried, cites Mr. Travers as having tied up with success a small aperture in the stomach.

For the treatment of this grave accident, what are the resources which we may call to our aid?

If we consult the ordinary text-books on surgery, we might infer at once that, no matter what we do, death will most certainly ensue within a very few days at the farthest. Thus Gross, in his work on the urinary organs (p. 146), says: "It is obvious, from what has been already stated, that no measures, however well directed, will, in general, be of any avail in saving life."

The indications to be met are very apparent, viz., to prevent extravasation of urine, and subdue inflammation. In far the greatest number of cases, as their records will show, extravasation has happened upon the very receipt of injury, so that at best we can only prevent its secondary recurrence. The stereotyped mode of accomplishing this, as handed down from one book to another, and from teacher to pupil, is to prevent the patient assuming the erect position, or making any effort to void his urine. A catheter, and at the present day (very wisely, we think) one of flexible character, with an eye at the point as well as at the sides, is to be introduced, so that whatever urine may remain in the bladder may be removed, and this instrument is to be either frequently introduced, or else allowed to remain just within the neck of the bladder for a variable period of time, so urine may escape as fast as it enters the bladder. This course of treatment, we are told by Mr. Birkett (Holmes's "Surgery," vol. ii., p. 484), should be persisted in for *not less* than fourteen days after the receipt of the injury. Should any sign of extravasation appear externally, free incisions are to be made, to allow the escape of fluid, and facilitate the casting off of sloughs; while inflammatory action is to be controlled either by calomel, blisters, local bloodletting, or opium, the latter being now chiefly relied upon.

This will be found to be the sum and substance of treatment not only laid down in text-books, but the mode of practice usually pursued in our hospitals. The frequent introduction of the catheter, or the confining the instrument within the bladder for any length of time, is attended often with serious inconvenience, which is too well known, not only to the patient but also to the surgeon, to require more than a reference at the present time.

The desire on the part of surgeons to render this accident less of an opprobrium to their art has led some from time to time not only to suggest but put in practice other forms of treatment—and with respect to some of these, “it strikes us they have never been fairly tried—abandoned, it may be, on account of temerity on the part of practitioners who have preferred to allow a patient to die, in an orthodox manner, rather than walk over ground that was too new, or not sufficiently broken for their *cautious feet*. Perhaps other methods of treatment may have been forgotten, or they may not have been familiar to some authors or surgeons. The latter we must suppose has frequently been the case, as we so seldom see them referred to in works on surgery.

The various methods of operative interference which we now allude to, which have either been proposed or put in practice, with the hope of better meeting the necessities of the case, and thus rendering this accident less fatal than it has proved under the accepted and old-established course of practice, may be grouped together under the following heads:

1. Opening the bladder above the pubes, as in the high operation for stone, or else simply tapping the organ in this locality.

2. Tapping the cavity of the pelvis either above the pubis, or the pelvic *cul-de-sac* through the rectum.

3. Perineal section, and then dilating the membranous portion of the urethra and neck of the bladder, as in the median operation for stone.

4. Opening the bladder either by the lateral or bilateral method, as in lithotomy.

The first method, viz., opening the bladder above the pubis, at first sight, especially where the anterior portion is supposed to be the part ruptured, and the urine has extravasated into the areolar tissue, might strike us as being very timely, as through this means both extravasated blood and urine might readily be removed. But when we consider that extravasation as a rule takes place rapidly, and at the moment of laceration, and, as a natural consequence, collapse—more or less extensive—of the viscus will immediately ensue, the value of this operation, as a means of preventing secondary trouble, to our mind,

is not very great. Indeed, it seems that about all that we might hope to accomplish, in the majority of cases, could be obtained through the simpler means of free and deep incisions made in this region.

The danger alone of wounding the peritonæum, if not already injured in our attempts to open a collapsed or contracted bladder in this locality, and thus adding a serious complication to an injury already sufficiently grave, would be enough to make us hesitate in selecting this course of procedure, especially when another seems to hold out more favorable results.

As far as I am aware, this operation has been put in practice but once, and this at the late New York Hospital, in a case of supposed rupture of the anterior part of the bladder. Here the peritonæum was wounded in the operation; some hours afterward perineal section was performed, and the organ was then discovered not to have been lacerated, but, as the autopsy subsequently showed, rupture of the urethra close to the neck of the bladder had taken place.

The risk that we may be in error as to our diagnosis in some cases, as the above case shows, must also militate against this operation.

With respect to paracentesis either above the pubis or of the pelvic *cul-de-sac* through the rectum, which is the second method we have spoken of. Paracentesis above the pubis, so far as I can learn, has been resorted to but twice: First, according to Dr. Harrison ("Cases of Rupture of the Urinary Bladder, with Remarks by Robert Harrison, M. D., etc.," *Dublin Journal of Medical Science*, July 1, 1836), by Bonetus, blood only flowing through the trocar, and the patient dying forty-two hours from the time of the accident. The second case was by Dr. Cusack ("Dublin Hospital Reports," vol. ii., 1818, p. 312), in February, 1814. The operation was done on the third day after the accident, fluctuation being distinguished in the abdominal cavity; a large quantity of urine of a natural color and perfectly transparent was drawn off, and the patient expressed himself relieved. In this case the gum-elastic catheter was also secured in the urethra. On the sixth day the patient was distressed

by frequent involuntary seminal emissions, and the urine had ceased either to flow from the wound above the pubis, or through the catheter; and he died on the morning of the eighth day. The rupture in both of these cases was in the posterior portion of the bladder. This mode of operating certainly would not lead us to hope that much could be obtained from it, as it does nothing toward preventing further extravasation, and both cases in which it was tried, we have seen, proved fatal.

Boyer (*Maladies Chirurgicales*, tome ix., p. 61), while remarking upon a case of lacerated bladder, says that no relief can be afforded in this class of injuries—the paracentesis of the abdomen, and retaining a catheter in the bladder, are the only surgical efforts that can be attempted; but, before paracentesis can be performed, the fatal peritonitis has sealed the doom of the patient.

With this opinion Dr. Harrison says he does not fully concur, his own being that in paracentesis we are to find the great remedial agent; but, as the effused urine is chiefly found in the pelvic *cul-de-sac*, we are to tap this locality; and he has therefore proposed that in these injuries this *cul-de-sac* be tapped through the rectum. “Should the parts,” he says, “be in that state in which dissection has shown them in some cases to have been, we may suppose that the pelvic *cul-de-sac* is distended with fluid, coated with lymph, and well protruded toward the rectum, or between this and the bladder; that the latter viscus is empty and rather small, and that adhesions have nearly closed the pelvis above, and separated it from the abdomen; if a small opening be now made through the rectum into this *cul-de-sac*, the irritating fluid may be discharged without injury to any important part; indeed, the opening into this new and circumscribed cavity cannot even open into or affect the general peritonæum, provided the superior pelvic and vesical adhesions have been perfect; in fact, a new cavity has been formed, coated internally like an abscess, and containing a foreign and an irritant fluid, and the operation now suggested is merely opening this in the most depending situation.”

In addition to this, he recommends retaining the cath-

cter in the bladder, and the free administration of opium. This operation Mr. Harrison believed to be in accord with the sound principles of general pathology; he had no experience in its favor, but was led to this view from the appearance which the autopsy of several cases had presented.

This mode of treatment was proposed to the profession in 1836, but we are yet to learn that it has ever been put in practice.

At first sight, it certainly may appear very plausible, and in theory, as regards the necessity of giving vent to extravasated urine, it undoubtedly is correct. The objections to this operation strike us as follows: It, in the first place, is not suitable to all classes of cases; for we must bear in mind that, though in the great majority of cases of ruptured bladder the rent is in the posterior portion and through the peritonæum, yet there is a proportion of cases where the laceration is superior or anterior, and, the peritonæum not being wounded, the urine does not collect in the pelvic *cul-de-sac*, and we are not always able to say to which variety a case may belong. Again, in the performance of this operation, we fear that the bladder might be opened rather than the *cul-de-sac*, there being a number of cases in which the autopsy has disclosed this organ, though torn, to contain considerable urine; and this fact was evident in our case as well as others we have seen reported, from the ability of the patient to pass water himself.

Another danger lies in the risk we may run of wounding a coil of small intestine or the rectum itself. There would be no danger in doing this, it is true, if this sac were so completely shut in and closed above as Dr. Harrison's observations led him to think was often the case.

But do we often find such a condition of things as Dr. Harrison describes? In the paper of Dr. Harrison we find but one case given, and that occurred in his own practice, where the pelvic *cul-de-sac* was entirely shut off by adhesions from the abdominal cavity, and one case which he cites as occurring to Dupuytren where such condition almost existed. One of these cases died on the seventh day after the receipt of injury, while the other lingered until the eighth day. This was also the case

in a patient under the care of Dr. Cusack ("Dublin Hospital Reports," vol. ii., p. 316), who lived eight days.

These are the only three cases out of seventy-eight, as collected by Dr. Smith, where the *post-mortem* appearances revealed such a condition of things, and it is very evident that Nature could only so protect herself after an interval of some days; whereas, were we to wait for these adhesions to form, in by far the greater number of cases death would relieve the patient before the surgeon.

Though the proposal of this operation was a great step in the right direction, it does not meet all the requirements of the case. It does not obviate the necessity of constantly retaining the catheter in the bladder, and this to us is objectionable. If the catheter is not constantly watched, and this is not always possible, we know how very liable its eyes are to become occluded, either from blood-clots or mucus, and then, if the rent in the bladder is low down, what have we to prevent urine again passing into the peritoneal cavity? Even under the most favorable circumstances, the catheter will not fully protect against this accident.

In respect to the *third* mode of treating these cases, namely, by perineal section, and then dilating the membranous portion of the urethra and neck of the bladder with the finger, as in the median operation for stone, we know not by whom it was first suggested, though we are aware that it has been followed in at least one case in this city, and probably in several.

This case was in St. Luke's Hospital, and was operated on by Dr. Robert F. Weir. The accident occurred in a middle-aged man, by his being caught between a ferry-boat and the bridge. Upon introducing the finger into the bladder, the doctor discovered that the pubic bones were fractured, and projected through the anterior wall of the bladder. This case resulted fatally.

Though this operation is a decided advance in treatment over the one we previously considered, yet its disadvantages seem to us to consist in the fact (which is claimed as one of its advantages by the advocates for the median operation in lithotomy), that after this operation the patient is not troubled

by the urine dribbling away from him, and, if not at once, he very speedily possesses control over his bladder.

That this is the case, no matter how thoroughly the neck of the bladder is dilated, unless it be lacerated in the removal of the calculus, all are aware, who have had experience in the median operation for stone. This, then, being the case, wherein by this operation have we taken any steps to prevent the urine again soon finding its way through the rupture in the bladder? Our only plan to prevent such an occurrence as a consequence of this operation, it appears to me, would be frequent dilatation of the neck of the bladder, and this certainly would be a most serious objection.

We now come to the *fourth* and last method which has been practised in these critical cases, and the one which we desire earnestly to advocate, viz., the opening of the bladder freely by means of the lateral or bilateral operation as for stone.

To American surgery belongs the honor of having given to the profession this mode of treatment; and to Dr. William J. Walker, of Boston, belongs the credit of having first put in practice, and, I believe also that of originating, this plan of treatment.

Dr. Walker's case was that of a man, aged twenty-three, of sound constitution, and of temperate habits, a railroad-conductor by occupation, who was caught, during an accident, between the engine and a car. When the doctor saw him, which was twenty-four hours after the accident, he presented the symptoms of a man passing into collapse. A tumor was observed extending from the whole line of Poupert's ligament nearly to the umbilicus, almost as large as the open hand, and elevated above the surface an inch and a half; the case was also complicated by fracture of the pelvis at the symphysis pubis. A catheter was introduced, and several ounces of urine withdrawn, whereupon the tumor referred to disappeared, and the bladder was then opened as in the lateral operation for stone, and immediate relief followed. The fracture was found to have united twenty-five days after the accident, and in fifty-five days from the time of injury the patient resumed his occupation. This case was regarded (and

we think very justly) by Dr. Walker as one of laceration anteriorly and external to the peritonæum (medical communication to the Massachusetts Medical Society, Art. IV., Case VI. of vol. vii., 1845).

We have had our attention turned to this subject on several occasions, both from cases observed while a student, and while house-surgeon at Bellevue Hospital in 1860. It was not, however, until 1863, when Dr. Smith gave me a copy of his paper on "Rupture of the Bladder," that I became acquainted with this plan of treatment, which struck me as the most plausible that had been suggested, and from that time I determined to resort to it should a case ever come under my care, and, in my instructions to students, I have recommended it as one worthy to be followed.

We should feel that we were doing great injustice to Dr. Smith were we to omit stating that he, in the paper so often alluded to, while speaking of this operation, says that it "seems the most rational yet pursued." If we but consider for a moment, I think we shall be convinced that it is the most practical and common-sense method in dealing with these cases that has yet been proposed or practised, and one which, more fully than any other, meets the most urgent requirements of the case, viz., the giving vent to extravasated urine, and preventing recurrence of the same.

That it is of equal service, whether the rupture has taken place either at the anterior or posterior portion of the bladder, both Dr. Walker's case and my own fully testify. Again, in both cases in which it was tried it was successful, and this is more than can be said of any other treatment, especially when so complicated as each of these was—one from fracture of the pelvis, the other from general peritonitis, with extravasation of urine into the pelvic cavity.

These are the only two cases of which I can find any record of this operation having been done; and mine is the only one in which laceration was evidently in the posterior portion of the organ, with extravasation into the pelvic cavity, which recovered through means of operative interference. Should I be in error in this respect, I trust I shall be corrected.

To insure a greater chance of success from this operation,

it appears needless to urge an early resort to it. Still, after some time has elapsed, we find it may prove successful in saving life, twenty-four hours having elapsed from the time of injury in the first case, and sixty-two and a half hours in my case, before the operation was done.

In a previous portion of this paper we stated that the records of gunshot-wounds of the bladder prove that they were far from being so uniformly fatal as generally supposed; whereas, in the cases of incised wounds, the result is almost uniformly disastrous.

The cause for this, I believe, is to be found in the fact that, in the former class of cases, the passage of the ball leaves a free opening through both the bladder and walls of the pelvis, whereby the urine is allowed a ready exit; while with the latter variety no such egress is obtained.

We find also cases reported where recovery has taken place, when abscesses have pointed in the perineal region, and having been opened, either by the surgeon or through natural processes, or where the abscess has burst into the rectum, and urine has flowed out through the sinuses thus formed. All this has occurred even where the sloughing was most extensive, and teaches us a lesson, I think, in the treatment of such cases.

When the rupture has evidently been through the anterior part of the organ, and symptoms of extravasation into the areolar tissue are present, in addition to the operation of Dr. Walker, we should resort to free and deep incisions through the cedematous parts.

When this accident happens in the female, the indications are equally obvious; and here we believe, if the bladder be freely opened through the vagina, our prospects of success would be greatly enhanced.

In conclusion, there are two more points of interest to which I would like to draw attention: First, in reference to the power of locomotion remaining for a while after the occurrence of the accident; and, second, the ability of the patient to void urine of his own accord. Both these functions, as a rule, are abolished at the moment of injury. In the case I report, it will be observed that the patient walked to the hospital, and

was able to move about the ward on the day after his admission, though in a stooping position, and on this day he could at times pass water of his own accord, though in small quantities.

Looking over Dr. Smith's collection of seventy-eight cases, we find that the power of locomotion was present only in seven cases, and in but three to any considerable degree. The most remarkable case in this respect we find mentioned by Dr. Harrison (*Dublin Medical Journal*, vol. ix., p. 354, 1836), of a man who, though so weak as hardly to be able to walk immediately after the accident, soon rallied and went home without assistance. After spending a restless night, unable to pass water, he walked a distance of three miles to a surgeon, who drew off some water for him, when he again walked home. This accident happened on a Saturday night, and, though feeling very bad, he went to work on Monday, but, about twelve o'clock, feeling very ill, with pain in the belly, he took a glass of whiskey and again walked to see the surgeon, but, on his way back, was obliged to ride part of the distance. Death occurred in this case on the eighth day. The autopsy revealed an oblique fissure through the posterior surface of the bladder, the edges of which were thickened and slightly adherent, so that the doctor was unable to press any of the pelvic fluid into the bladder. In the pelvic cavity was found nearly a quart of urine; this was shut in from the abdominal cavity by adhesions.

With reference to the ability on the part of the patient to void urine, we find that in only three cases did it exist immediately after the accident, and in only a comparatively small proportion of cases did it ever recur, except, of course, in those who recovered.

In closing, I take this occasion publicly to acknowledge my indebtedness to Dr. Schuyler for the watchful care he bestowed upon my patient, to Dr. Sizer, our senior assistant, for the very accurate notes which he furnished me of the case, and to Dr. Samuel S. Purple for kindly placing at my disposal valuable works of reference contained in his library.



The first of these is the fact that the United States is a young nation, and that its history is a history of growth and development. It is a history of a people who have been able to overcome many difficulties and to build a great nation out of a small colony.

The second fact is that the United States is a nation of immigrants. It is a nation of people who have come from many different parts of the world, and who have brought with them their own customs and traditions. This has made the United States a melting pot of different cultures, and has helped to make it a great nation.

The third fact is that the United States is a nation of freedom. It is a nation where people are free to express their opinions, to follow their own paths, and to live their own lives. This has made the United States a great nation, and has helped to make it a model for other nations.

The fourth fact is that the United States is a nation of progress. It is a nation where people are always looking for new ways to do things, and where they are always trying to make things better. This has made the United States a great nation, and has helped to make it a model for other nations.

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